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VASCULAR DISEASE

ESTABLISHING THE LINKS BETWEEN THE SOLUBLE RECEPTOR FOR ADVANCED GLYCATION END PRODUCTS, ASYMMETRIC DIMETHYLARGININE AND LOW-GRADE INFLAMMATION IN ESSENTIAL HYPERTENSION

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Background: The soluble receptor for advanced glycation end products (sRAGE) participates in the pathogenesis of vascular disease, while subclinical inflammatory processes and increased asymmetric dimethylarginine (ADMA) levels are related to atherosclerosis progression. In the present study, we investigated the relationships of sRAGE with ADMA and high-sensitivity C-reactive protein (hs-CRP) in essential hypertensives.

Methods: Our population consisted of 80 newly diagnosed untreated non-diabetic patients with stage I to II essential hypertension [48 men, mean age=52 years, office blood pressure (BP)=145/93 mmHg]. In all participants, venous blood sampling was performed to estimate hs-CRP and sRAGE levels. The distribution of sRAGE was split by the median (1060.3 pg/ml) and accordingly subjects were stratified into those with high and low values.

Results: Patients with low sRAGE (n=41) compared to those with high sRAGE values (n=39) had greater body mass index (29.8±4.6 vs 27.2±2.9 kg/m2, p<0.05) and 24-h systolic BP (138±10 vs 131±7 mmHg, p=0.001), while did not differ regarding metabolic profile (p=NS for all). Moreover, patients with low sRAGE compared to those with high sRAGE levels exhibited higher hs-CRP (4.8±2.4 vs 2.4±1.9 mg/l, p<0.0001) and ADMA (0.58±0.06 vs 0.52±0.04 μmol/l, p<0.0001), independently of confounders. In the total population, sRAGE was associated with body mass index (r=-0.241, p=0.003), waist to hip ratio (r=-0.463, p<0.0001), 24-h pulse pressure (r=-0.372, p=0.001), hs-CRP (r=-0.292, p=0.012) and ADMA (r=-0.355, p=0.002). Regarding ADMA, it was related to 24-h systolic BP (r=0.491, p<0.0001) and PWV (r=0.487, p<0.0001). Multiple regression analysis revealed that body mass index, 24-h systolic BP, hs-CRP and ADMA were the independent predictors of sRAGE (R2=0.51, p<0.0001).

Conclusion: In essential hypertension, decreased sRAGE levels are associated with pronounced inflammatory activation and endothelial dysfunction, as reflected by increased hs-CRP and ADMA levels. Moreover, the relation of sRAGE with hs-CRP and ADMA, underscores the emerging role of this receptor in the progression of vascular atherosclerosis in the hypertensive setting.